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ABSTRACT

A 13-item questionnaire was administered to 287 engineering students at the University of Nebraska-Lincoln to obtain information about their grade point average, financial assistance, membership in honorary societies, living arrangements, sex, and frequency and type of cheating on homework assignments and tests. Also included were four questions assessing their perceptions of cheating among their peers. Results indicate that the majority of students cheat. Several negative consequences are identified, including harm done to cheaters themselves, the profession, and society at large. Several solutions are also proposed, including persuading students to realize the harmful consequences of cheating, assigning ungraded homework problems or assigning different problems to different students, and closely monitoring students taking examinations. Lastly, it is suggested that some benefit would be gained from publicizing university and departmental policies on cheating, with the assumption that these policies are strictly enforced. (Author/JN)

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Cheating in Engineering Courses:

Short- and Long-Term Consequences

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This paper briefly describes a survey taken at the University of Nebraska-Lincoln assessing the frequency and type of cheating by engineering students. The results indicate that the majority of students cheat. Several negative consequences are identified, including harm done to cheaters themselves, the profession, and society at large. Several solutions are also proposed, including persuading students to realize the harmful consequences of cheating, assigning ungraded homework problems or assigning different problems to different students, and closely monitoring students taking exams. Lastly, it is suggested that some benefit would be gained from publicizing university and departmental policies on cheating, with the assumption that these policies are strictly enforced.

This paper was presented at the 19th Midwest Section of the American Society of Engineering Education meeting (March, 1984, Wichita).

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Cheating in Engineering Courses:

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> Why worry about cheating? Simple, it concerns us all. On the national level, Carnegie Council Report notes that there is a growing "ethical deterioration" in academic life. The report indicated that an increasing percentage of college students feel that "some forms of cheating are necessary to get the grades they want" [Fair Practices in Higher Education: Rights and Responsibilities of Students and Their Colleges in a Period of Intensified Competition for Enrollments, San Francisco: Jossey-Bass, 1979]. "Despite a growing public awareness that college cheating is epidemic" [John S. Baird, Jr., "Current Trends in College Cheating," Psychology in the Schools, 17, 1980, 515-521] instructors and students often overlook the implications of academic dishonesty . . . by applying the common myths of: "Don't worry they'll get caught in the end," and "They're only hurting themselves." However, such is not the case. Cheating has short term effects both in and out of the classroom, with long-range effects that reach far into the field of professional engineering.[1]

Simply because recent survey results indicate widespread cheating among college students is no basis for presuming that cheating is a major problem in engineering programs. Jack Evett reports that, aside from his own opinion letters, no articles even remotely concerned with cheating among engineering students have appeared in any ASEE publications.[2] The lack of information on this subject prompted the present study in an attempt to document whether and

to what extent engineering students cheat, with careful consideration given to the consequences of and possible solutions to the problem.

The Survey

Questionnaire. A thirteen-item questionnaire was designed to gather information about the respondents' GPA, financial assistance, membership in honorary societies, living arrangements, gender, and frequency and type of cheating on homework assignments and tests. Also included were four questions assessing respondents' perceptions of cheating among their peers.

Respondents. The questionnaire was administered to 287 students (251 men, 36 women) enrolled in the Engineering Ethics course required of all seniors majoring in engineering at the University of Nebraska-Lincoln. Only one student declined to complete the questionnaire, and seven other students were absent on the day it was administered.

Data Analysis. The responses were tabulated and cross-tabulated. No statistical tests of significance were conducted.

Question Selection. For the purposes of this proceedings report, in addition to the demographic information, four questions considered to be of particular interest are:

Question 7. Even when the instructor has made clear that a homework assignment or take-home test is to be done on an individual basis, I have nevertheless _____ worked with one or more other students in completing the assignment.

A. Always B. Usually C. Sometimes D. Seldom E. Never

Question 8. When a crib sheet (cheat sheet) is not permissible on an exam, I _____ use one anyway. This would include such things as writing formulas on the desk, on the back of blue books, or on paper to be used for the exam.

A. Always B. Usually C. Sometimes D. Seldom E. Never

Question 11. Even when the instructor has made it clear that homework assignments or take-home tests are to be completed on an individual basis, _____ percent of my classmates work with one or more other individuals in completing the assignment.

A. 60% or more B. 40 to 60% C. 20 to 40% D. 5 to 20% E. Fewer than 5%

Question 12. When a crib sheet (cheat sheet) is not permissible on an exam, _____ percent of my classmates use one. This would include such things as writing formulas on the desk, on the back of blue books, or on paper to be used for the exam.

A. 60% or more B. 40 to 60% C. 20 to 40% D. 5 6o 20% E. Fewer than 5%

Results

Question 7. Only 125 of the respondents (44%) reported that they had never and would never collaborate with another person on a homework assignment. Although 99 of the remaining respondents (35%) indicated that only seldom had they or would they collaborate, 59 of the respondents (20%) reported that they usually or sometimes collaborate.

Question 8. Regarding the use of crib sheets, 236 respondents (82%) reported that they had never and would never use them, 43 respondents (15%) that they seldom use them, and the remaining 8 respondents (3%) that they usually or sometimes use crib sneets.

Question 11. Only 35 respondents (13%) reported perceiving fewer than 5% of their peers as never having collaborated on assignments. However, 155 respondents (56%) reported perceiving more than 20% of their peers as having collaborated.

Question 12. Regarding the use of crib sheets, 156 respondents (56%) reported perceiving that fewer than 5% of their peers use them, 84 respondents (30%) that 5 to 20% of their peers use them, and the remaining 37 respondents

(14%) that 20% or more of their peers use use crib sheets.

Summary of Results

These results indicate that cheating is common among engineering students. By their own admission, 56% of the respondents reported having ignored, at least occasionally, specific instructions not to collaborate on graded assignments. Further, 20% of the respondents reported frequent collaboration with others.

As might be expected, far fewer students reported using crib sheets on exams than collaborating on graded assignments. Presumably this is because of the high risk of being detected when cheating on exams as opposed to the low risk when collaborating on homework assignments.[3] Nevertheless, 18% of the respondents reported having used crib sheets on exams, even if only infrequently, and this is too large a segment of the population to ignore.

It is interesting to note that those students who reported the greatest amount of collaboration also perceived the largest percentage of their classmates collaborating. For instance, among the 14 respondents who reported that they usually collaborate on assignments, 11 of them (78%) also reported perceiving that no fewer than 40% of their classmates collaborate as well. However, among the 126 respondents reporting that they seldom collaborate, only 21 (17%) reported perceiving that no fewer than 40% of their classmates collaborate.

These results are similar to those of other surveys indicating that cheating is widespread among college students[4] and support Evett's conclusion that cheating is also commonplace among engineering students.[5] Perhaps one of the reasons why cheating is so wiedespread is that teachers and students alike fail to recognize the serious consequences of cheating--for themselves and others--and, thus, do not take steps to minimize it. Some of

the consequences and solutions are considered here and may motivate both teachers and students to work actively against cheating.

Consequences of Cheating

Grade Inflation. One of the consequences of cheating is grade inflation, which leads to a cheapening of values assigned to previously acceptable grades. This is self-defeating, for by the act of cheating the student has created an environment in which high grades are rendered meaningless by their common occurrence. Also, because of grade inflation, students experience even greater pressure to obtain excellent grades.[6]

Harm done to Noncheaters. Students with high GPAs are most likely to be retained in those programs with limited numbers of openings. Certainly the most able students should be kept in those programs, but the high incidence of cheating diminishes the creditability of the GPA as a valid index of ability. Some marginal students may be retained in programs merely because of their superior ability to cheat rather than for their real ability to handle the material.

Employment Consequences. The ultimate reason for cheating, presumably, is to obtain quality employment. Unfortunately, cheating prevents one from mastering the skills needed to excel in a given position; this lack of skills may cause the employee to be dismissed, resulting in harm both to self and family. An even more harmful consequence results if the employer presumes that the deficient employee is indicative of all graduates of a particular program and, accordingly, avoids hiring other graduates of that program. In this manner, one cheater can negatively affect the hiring potential of many other students.

Harm to Self and Society. When people cheat, they are lying to themselves by constructing an inflated self-impression about their abilities.

This is something akin to weight lifters deceiving themselves into believing they can lift a much heavier weight than they actually can simply because they had inflated the numbers stamped on their practice weights. Whereas the harm in the case of the weight lifter is confined to self (physical injury from lifting too heavy a weight), an engineer who has undergone similar self-deception is in a position to do harm to a far greater number of people.

Proposed Solutions

The most effective solutions are those that seek to prevent cheating in the first place. An effective--although difficult to implement--strategy is to convince students that cheating works to their disadvantage and that they have little to gain and much to lose from it.

A second measure is to use assignment and exam procedures making it difficult for students to cheat. Other studies as well as this one report that the most frequent form of cheating occurs on homework assignments.[7] In light of this, an instructor should change the assignments and exams from one semester to the next and, within a given class, either not grade homework assignments or assign unique problems to each student.

A third thing that can be done to help prevent cheating is to make clear to students and teachers, both in writing and in person, the university and departmental policies proscribing cheating. Further, these policies should clearly specify the sanctions implemented for cheating. All concerned should understand that these policies and sanctions have little deterring value if they are not enforced.

Summary

This paper briefly describes a survey done at the University of Nebraska-Lincoln assessing the frequency and type of cheating by engineering

students. The results indicate that the majority of students cheat. Further, students reported that they perceive the vast majority of their classmates as cheating. The negative consequences for cheating are several, including harm done to the cheaters themselves, to the professional community to which they belong, and to society in general. In light of these harms, several solutions are proposed, including persuading students to realize the damaging consequences of cheating, encouraging instructors to assign unique problems for each student, closely monitoring students' exam behaviors, and publicizing and enforcing university and departmental policies on cheating.

Footnotes

[1] Ed Sisson, "Cheating: It Affects Us All," Nebraska Blueprint, 83, No. 2 (1983), 4.

[2] Jack B. Evett, "Cozenage: A Challenge to Engineering Instruction," Engineering Education (Feb., 1980), 434-436.

[3] J. Leming, "Cheating Behavior, Situational Influence, and Moral Development," Journal of Educational Research, 71 (1978), 214-217.

[4] Stanley N. Wellborn, "Cheating in College Becomes an Epidemic," U.S. News and World Report, 20 Oct. 1980, pp. 39 and 42.

[5] Evett.

[6] David C. Barnett and Jon C. Dalton, "Why College Students Cheat," Journal of College Student Personnel, 22 (Nov. 1981), 545-551.

[7] Baird; Barnett and Dalton.

Biographical Sketches

Ed Sisson is a senior in the Department of Chemical Engineering at the University of Nebraska-Lincoln with a cross-college major declared in speech communication. He is a writer for the Nebraska Blueprint, the University of Nebraska magazine of engineering and technology. His publications in the Blueprint are: "Cheating: It Affects Us All," November/December, 1983; and "Toxic Wastes: Media's News, Industry's Plight, Public's Misfortune," October, 1983.

William R. Todd-Mancillas is an assistant professor in the Department of Speech Communication at the University of Nebraska-Lincoln. His primary teaching and research interests are interpersonal and instructional communication. Recently he has become interested in considering ways in which ethics can be taught and reasearched among college students. This article is the first of a series of research projects he is conducting on the subject.